

**METHODS OF CARBON NANOTUBE FABRICATING BY PEPTIDE OR
NUCLEIC ACID MICROPATTERNING**

ABSTRACT OF THE INVENTION

The methods, apparatus and systems disclosed herein concern ordered arrays of carbon nanotubes. In particular embodiments of the invention, the nanotube arrays are formed by a method comprising attaching catalyst nanoparticles 140, 230 to polymer 120, 210 molecules, attaching the polymer 120, 210 molecules to a substrate, removing the polymer 120, 210 molecules and producing carbon nanotubes on the catalyst nanoparticles 140, 230. The polymer 120, 210 molecules can be attached to the substrate in ordered patterns, using self-assembly or molecular alignment techniques. The nanotube arrays can be attached to selected areas 110, 310 of the substrate. Within the selected areas 110, 310, the nanotubes are distributed non-randomly. Other embodiments disclosed herein concern apparatus that include ordered arrays of nanotubes attached to a substrate and systems that include ordered arrays of carbon nanotubes attached to a substrate, produced by the claimed methods. In certain embodiments, provided herein are methods for aligning a molecular wire, by ligating the molecular wire to a double stranded DNA molecule.